

May 24, 2008

Atty Docket No.: NL 030699 (79002-35)

Serial No.: 10/556,009

Filed: November 8, 2005

Page 2 of 11

SPECIFICATION AMENDMENT

Please amend the paragraph beginning on page 6, line 9 as follows:

“Two electrodes 4 and 5 are arranged in the discharge vessel 3, which has an internal diameter $d_i \leq 2$ mm. The discharge vessel is closed off at either end by a respective ceramic projecting (extruded) plug 34, 35 which encloses with narrow interspacing a respective current lead-through conductor 40, 50 to the electrode 4, 5 arranged in the discharge vessel and which is connected to the relevant conductor in a gastight manner by means of a melting-ceramic joint (not shown in Fig. 1) at an end facing away from the discharge space. The discharge vessel is surrounded by a cylindrically-shaped outer bulb 1 (see Figs. 2A, 3A and 3B). The metal halide lamp is further provided with a lamp cap socket 2. A discharge extends between the electrodes 4 and 5 in the operational state of the lamp. The electrode 4 is connected to a first electrical contact forming part of the lamp cap socket 2 via a current conductor 8. The electrode 5 is connected to a second electrical contact forming part of the lamp cap socket 2 via current conductors 9 and 19. The current conductor 19 is surrounded by a ceramic tube 190.”

Please amend the paragraph beginning on page 7, line 11 as follows:

“Fig. 3A shows a cross-section of the discharge vessel 23 and the outer bulb 21 according to an embodiment of the invention of a metal halide lamp of Fig. 1 in detail. The cross-section is shown in a plane perpendicular to the longitudinal axis 10 in Fig. 1. In the example of Fig. 3A the internal diameter of the outer bulb 21 is approximately 3 mm and the outer diameter of the outer bulb 21 is approximately 7 mm. In the metal halide lamp according to this embodiment of the invention, a portion 25, 26 of the outer bulb 21 is formed as a flat [[a]] surface. Such a portion 25, 26 can easily be produced by sawing off a part of the cylindrical outer bulb 21. It is not necessary that the flat portion of the outer bulb extends over the entire length of the outer bulb 21; in principle it is sufficient to cut away only a part that is somewhat larger (e.g. 4-5 mm larger) than the size of the discharge [[space 42]] vessel 23, i.e. approximately the distance between the two electrodes in the discharge vessel 23. In the example of Fig. 3A the outer bulb

21 is provided with two flattened portions with respective reference numerals 25 and 26 at opposite sides of the outer bulb. In an alternative embodiment the outer bulb is provided with only one flat portion. The flat portion 25, 26 functions as negative lens. The flat portion 25, 26 with respect to the longitudinal axis 10 (see Fig. 1) encompasses a segment of the outer bulb with a segment angle α in the range between $30 \leq \alpha \leq 60^\circ$. This range is set by the way images are projected in the vicinity of the so-called cut-off region following from the requirements for automotive passing beam patterns (ECE R98 requirements)."

Please amend the paragraph beginning on page 7, line 28 as follows:

"In Fig. 3A the transition between the first portion 25 and the remainder of the outer bulb 21 defines a first plane (in the example of Fig. 3A the plane coincides with the surface of the flat portion 25) indicated in the cross-section in Fig. 3A by line 25A. In addition, the transition between the second portion 26 and the remainder of the outer bulb 21 defines a second plane (in the example of Fig. 3A the plane coincides with the surface of the flat portion 26) indicated in the cross-section in Fig. 3A by line 26A. Preferably, the first plane and the second plane [[make]] are parallel to each other (*i.e.* the lines 25A and 26A are parallel with respect to each other). In an alternative embodiment the first and the second plane make an angle with respect to each other which angle, preferably is less than 10° (*i.e.* the lines 25A and 26A are at an angle $< 10^\circ$ with respect to each other)."

Please amend the paragraph beginning on page 8, line 29 as follows:

"Fig. 4A shows a cross-section of the discharge vessel 33 and the outer bulb 31 according to an alternative embodiment of the invention of a metal halide lamp of Fig. 1 in detail. The cross-section is shown in a plane perpendicular to the longitudinal axis 10 in Fig. 1. In the example of Fig. 4A the internal diameter of the outer bulb 31 is approximately 3 mm and the outer diameter of the outer bulb 31 is approximately 7 mm. [[In the metal halide lamp according to this embodiment of the invention, a portion 35, 36 of the outer bulb 31 is formed as a flat a surface.]] In the example of Fig. 4A the outer bulb 31 is provided with two curved portions with

May 24, 2008

Atty Docket No.: NL 030699 (79002-35)

Serial No.: 10/556,009

Filed: November 8, 2005

Page 4 of 11

respective reference numerals 35 and 36 at opposite sides of the outer bulb. The curved portion 35, 36 is less curved than the curvature of the remainder of the outer bulb 31 (*i.e.* the radius of the curved portion is larger than the radius of the remainder of the outer bulb). In an alternative embodiment the outer bulb is provided with only one curved portion. The curved portion 35, 36 functions as negative lens. The curved portion 35, 36 with respect to the longitudinal axis 10 (see Fig. 1) encompasses a segment of the outer bulb with a segment angle α in the range between $20 \leq \alpha \leq 110^\circ$. This range is set by the way images are projected in the vicinity of the so-called cut-off region following from the requirements for automotive passing beam patterns (ECE R98 requirements)."

Please amend the paragraph beginning on page 9, line 11 as follows:

"In Fig. 4A the transition between the first portion 35 and the remainder of the outer bulb 31 defines a virtual plane indicated in the cross-section in Fig. 4A by line 35A. In addition, the transition between the second portion 36 and the remainder of the outer bulb 31 defines a second virtual plane indicated in the cross-section in Fig. 4A by line 36A. Preferably, the first plane and the second plane [[make]] are parallel to each other (*i.e.* the lines 35A and 36A are parallel with respect to each other). In an alternative embodiment the first and the second plane make an angle with respect to each other which angle, preferably is less than 10° (*i.e.* the lines 35A and 36A are at an angle $< 10^\circ$ with respect to each other)."

Please amend the paragraph beginning on page 9, line 24 as follows:

"Fig. 4B shows an image calculated by means of ray tracing of the metal halide lamp of Fig. 4A observed at an imaginary point. The imaginary point is at a distance of 50 mm from the center of the discharge vessel. The image in Fig. 4B is displayed in the zy-plane. The dimensions of the image along the y-axis in Fig. 4B are a measure of the virtual external diameter of the discharge vessel 33 corresponding to the distance of the "extreme" light rays in Fig. 4A. For the metal halide lamp according to the embodiment of the invention the virtual diameter of the

May 24, 2008

Atty Docket No.: NL 030699 (79002-35)

Serial No.: 10/556,009

Filed: November 8, 2005

Page 5 of 11

discharge vessel [[23]] 33 is smaller than the actual diameter of the discharge vessel [[23]] 33, *i.e.* depending on the chose curvature approximately 85% of 2 mm, *i.e.* approximately 1.7 mm. The dimensions of the discharge vessel 33 in the metal halide lamp according to the alternative embodiment of the invention give rise to lower wall temperatures in the discharge vessel 33. These relatively low wall temperatures have a significant positive influence on the lifetime of the metal halide lamp.”